इंटरनेट मानक

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Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

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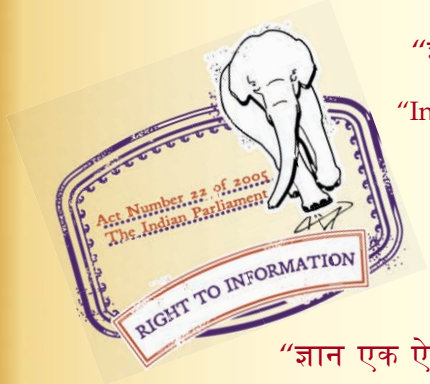
IS 7485-2 (2005): Countersunk flat head screws (common head style) with type H or Type Z cross recess - Product Grade A, Part 2: Steel of property class 8.8, stainless steel and non-ferrous metals [PGD 31: Bolts, Nuts and Fasteners Accessories]



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"Knowledge is such a treasure which cannot be stolen"

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IS 7485 (Part 2) : 2005
ISO 7046-2 : 1990

भारतीय मानक

टाईप एच और टाईप जेड प्रकार के अनुप्रस्थ खाँचों सहित चपटे काउंटरसंक शीर्ष वाले पेंच (सामान्य शीर्ष शैली)— उत्पाद ग्रेड ए

भाग 2 इस्पात की प्रोपर्टी क्लास 8.8, स्टेनलैस स्टील एवं अलौह धातु

(दूसरा पुनरीक्षण)

Indian Standard

COUNTERSUNK FLAT HEAD SCREWS (COMMON HEAD STYLE) WITH TYPE H OR TYPE Z CROSS RECESS — PRODUCT GRADE A

PART 2 STEEL OF PROPERTY CLASS 8.8, STAINLESS STEEL AND NON-FERROUS METALS

(Second Revision)

ICS 21.060.10

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

November 2005

Price Group 3

Bolts, Nuts and Fasteners Accessories Sectional Committee, PG 33

NATIONAL FOREWORD

This Indian Standard (Part 2) (Second Revision) which is identical with ISO 7046-2 : 1990 'Cross recessed countersunk flat head screws (common head style) — Grade A — Part 2 : Steel of property class 8.8, stainless steel and non-ferrous metals' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendations of the Bolts, Nuts and Fasteners Accessories Sectional Committee and approval of the Medical Instruments, General and Production Engineering Division Council.

This standard was originally issued in 1974 and revised in 1985. The earlier edition was based on ISO 7046 : 1983 'Cross-recessed countersunk flat head screws (common head style) — Product grade A and property class 4.8 only'. This second revision has been revised splitting into two parts harmonizing with ISO 7046-1 : 1994 and ISO 7046-2 : 1990 by adopting them.

Part 1 of this standard covers the screws for steel of property class 4.8.

Part 2 has been harmonized with ISO 7046-2 : 1990 by adoption to make pace with the latest developments taken place at international level.

The text of the ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain terminology and conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'.

b) Comma (,) has been used as a decimal marker while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their places are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 225 : 1983 Fasteners — Bolts, screws, studs and nuts — Symbols and designation of dimensions	IS 8536 : 1987 Fasteners — Bolts, screws, studs and nuts — Symbols and designation of dimensions (*first revision*)	Identical
ISO 261 : 1973[1)] ISO general purposes metric screw threads — General plan	IS 4218 (Part 2) : 2001 ISO general purpose metric screws threads: Part 2 General plan (*second revision*)	Technically Equivalent
ISO 888 : 1976 Bolts, screws and studs — Nominal lengths, and thread lengths for general purposes bolts	IS 4206 : 1987 Dimensions for nominal lengths and thread lengths for bolts, screws and studs (*first revision*)	Identical

[1)] Since revised in 1998.

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 898-1 : 1988[1] Mechanical properties of fasteners — Part 1 : Bolts, screws and studs	IS 1367 (Part 3) : 2002 Technical supply conditions for threaded steel fasteners: Part 3 Mechanical properties of fasteners made of carbon steel and alloy steel — Bolts, screws and studs (*fourth revision*)	Technically Equivalent
ISO 965-2 : 1980[2] ISO general purpose metric screw threads — Tolerances — Part 2 : Limits of sizes for general purpose bolt and nut threads — Medium quality	IS 14962 (Part 2) : 2001 ISO general purpose metric screw threads — Tolerances: Part 2 Limits of sizes for internal and external screw threads — Medium quality	do
ISO 3269 : 1988[3] Fasteners — Acceptance inspection	IS 1367 (Part 17) : 2004 Technical supply conditions for threaded steel fasteners: Part 17 Inspection, sampling and acceptance procedure (*fourth revision*)	Identical
ISO 3506 : 1979[4] Corrosion-resistant stainless steel fasteners — Specifications	IS 1367 (Part 14/Sec 1) : 2002 Technical supply conditions for threaded steel fasteners: Part 14 Mechanical properties of corrosion-resistant stainless-steel fasteners, Section 1 Bolts, screws and studs (*third revision*)	Technically Equivalent
ISO 4042 : 1989[1] Threaded components — Electroplated coatings	IS 1367 (Part 11) : 2002 Technical supply conditions for threaded steel fasteners: Part 11 Electroplated coatings (*third revision*)	do
ISO 4757 : 1983 Cross recesses for screws	IS 7478 : 1985 Dimensions for cross recesses (*first revision*)	do
	IS 7479 : 1985 Specification for recess penetration gauges (*first revision*)	do
ISO 4759-1 : 1978[3] Tolerances for fasteners — Part 1 : Bolts, screws and nuts with thread diameters between 1.6 (inclusive) and 150 mm (inclusive) and product grades A, B and C	IS 1367 (Part 2) : 2002 Technical supply conditions for threaded steel fasteners: Part 2 Tolerances for fasteners — Bolts, screws, studs and nuts — Product grades A, B and C (*third revision*)	do
ISO 6157-1 : 1988 Fasteners — Surface discontinuities — Part 1 : Bolts, screws and studs for general requirements	IS 1367 (Part 9/Sec 1) : 1993 Technical supply conditions for threaded steel fasteners: Part 9 Surface discontinuities, Section 1 Bolts, screws and studs for general applications (*third revision*)	Identical

[1] Since revised in 1999.
[2] Since revised in 1998.
[3] Since revised in 2000.
[4] Since revised in 1997 in three parts.

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 6157-3 : 1988 Fasteners _ Surface discontinuities — Part 3 : Bolts, screws and studs for special requirements	IS 1367 (Part 9/Sec 2) : 1993 Technical supply conditions for threaded steel fasteners: Part 9 Surface discontinuities, Section 2 Bolts, screws and studs for special applications (*third revision*)	Technically Equivalent
ISO 7721 : 1983 Countersunk head screws — Head configuration and gauging	IS 11362 : 1985 Head configuration and gauging of countersunk head screws	do

The technical committee has reviewed the provisions of the following International Standards referred in this adopted standard and has decided that they are acceptable for use in conjunction with this standard:

International Standard	*Title*
1SO 7721-2 : 1990	Countersunk flat head screws — Part 2 : Penetration depth of cross recesses
ISO 8839 : 1986	Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals

As decided by the Committee additional requirements of Packaging and BIS Certification Marking are given in National Annex A. These additional requirements are part of this standard.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

COUNTERSUNK FLAT HEAD SCREWS (COMMON HEAD STYLE) WITH TYPE H OR TYPE Z CROSS RECESS — PRODUCT GRADE A

PART 2 STEEL OF PROPERTY CLASS 8.8, STAINLESS STEEL AND NON-FERROUS METALS

(Second Revision)

1 Scope

This part of ISO 7046 specifies the characteristics of recessed countersunk flat head screws with threads M2 up to and including M10, of grade A and of property class 8.8 for steel, A2-70 for stainless steel and CU2 and CU3 for non-ferrous metals.

If, in special cases, specifications other than those listed in this International Standard are required, they shall be selected from existing International Standards, for example ISO 261, ISO 888, ISO 898-1, ISO 965-2, ISO 3506, ISO 4759-1, ISO 8839.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7046. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7046 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 225 : 1983, *Fasteners — Bolts, screws, studs and nuts — Symbols and designations of dimensions.*

ISO 261 : 1973, *ISO general purpose metric screw threads — General plan.*

ISO 888 : 1976, *Bolts, screws and studs — Nominal lengths, and thread lengths for general purpose bolts.*

ISO 898-1 : 1988, *Mechanical properties of fasteners — Part 1: Bolts, screws and studs.*

ISO 965-2 : 1980, *ISO general purpose metric screw threads — Tolerances — Part 2: Limits of sizes for general purpose bolt and nut threads — Medium quality.*

ISO 3269 : 1988, *Fasteners — Acceptance inspection.*

ISO 3506 : 1979, *Corrosion-resistant stainless steel fasteners — Specifications.*

ISO 4042 : 1989, *Threaded components — Electroplated coatings.*

ISO 4757 : 1983, *Cross recesses for screws.*

ISO 4759-1 : 1978, *Tolerances for fasteners — Part 1: Bolts, screws and nuts with thread diameters* > 1,6 *and* < 150 mm *and product grades A, B and C.*

ISO 6157-1 : 1988, *Fasteners — Surface discontinuities — Part 1: Bolts, screws and studs for general requirements.*

ISO 6157-3 : 1988, *Fasteners — Surface discontinuities — Part 3: Bolts, screws and studs for special requirements.*

ISO 7721 : 1983, *Countersunk head screws — Head configuration and gauging.*

ISO 7721-2 : 1990, *Countersunk flat head screws — Part 2: Penetration depth of cross recesses.*

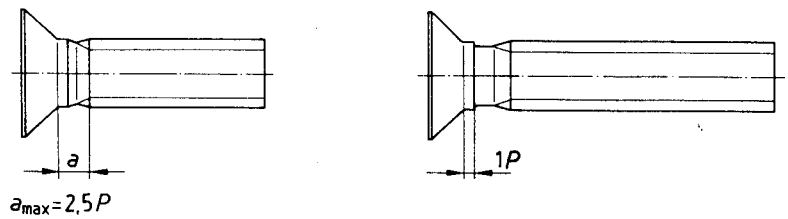
ISO 8839 : 1986, *Mechanical properties of fasteners — Bolts, screws, studs and nuts made of non-ferrous metals.*

3 Dimensions

See figures 1, 2 and 3, and table 1.

The shank diameter is approximately equal to the pitch diameter or equal to the major diameter permissible.

NOTE — Symbols and designations of dimensions are specified in ISO 225.



NOTE — For other dimensions see figures 2 and 3.

Figure 1 — Screw with underhead shoulder for penetration depth series 1 (deep)

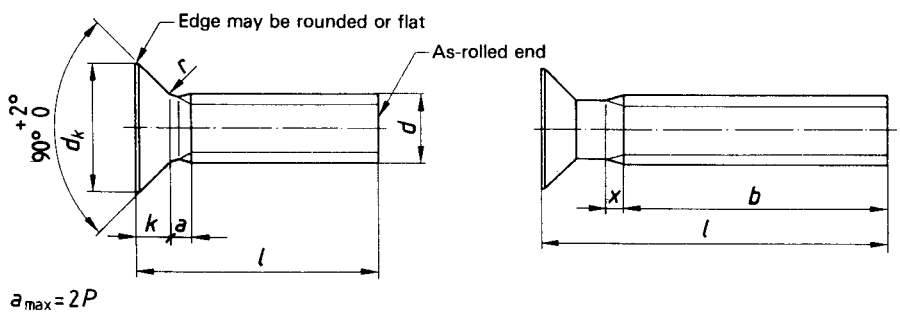


Figure 2 — Screw without underhead shoulder for penetration depth series 2 (shallow)

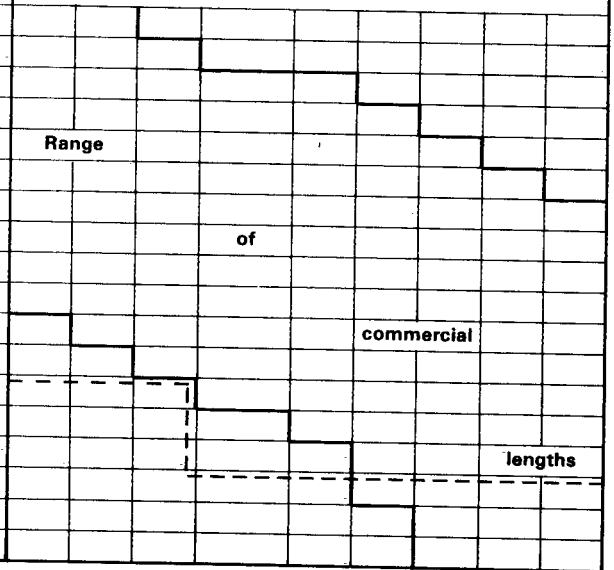
Figure 3 — Cross recess

Table 1

Dimensions in millimetres

Thread (d)				M2	M2,5	M3	(M3,5)[1]	M4	M5	M6	M8	M10
P[2]				0,4	0,45	0,5	0,6	0,7	0,8	1	1,25	1,5
b			min.	25	25	25	38	38	38	38	38	38
d_k		theoretical[3]	max.	4,4	5,5	6,3	8,2	9,4	10,4	12,6	17,3	20
		actual	max.	3,8	4,7	5,5	7,3	8,4	9,3	11,3	15,8	18,3
			min.	3,5	4,4	5,2	6,9	8,0	8,9	10,9	15,4	17,8
k			max.	1,2	1,5	1,65	2,35	2,7	2,7	3,3	4,65	5
r			max.	0,5	0,6	0,8	0,9	1	1,3	1,5	2	2,5
x			max.	1	1,1	1,25	1,5	1,75	2	2,5	3,2	3,8
Cross recesses	Series 1[4] (deep)	Type H	Recess No.	0	1		2			3	4	
			m ref.	1,9	2,9	3,2	4,4	4,6	5,2	6,8	8,9	10
			Penetration depth min.	0,9	1,4	1,7	1,9	2,1	2,7	3,0	4,0	5,1
			Penetration depth max.	1,2	1,8	2,1	2,4	2,6	3,2	3,5	4,6	5,7
		Type Z	Recess No.	0	1		2			3	4	
			m ref.	1,9	2,8	3	4,1	4,4	4,9	6,6	8,8	9,8
			Penetration depth min.	0,95	1,48	1,76	1,75	2,06	2,60	3,00	4,15	5,19
			Penetration depth max.	1,20	1,73	2,01	2,20	2,51	3,05	3,45	4,60	5,64
	Series 2[4] (shallow)	Type H	Recess No.	0	1		2			3	4	
			m ref.	1,9	2,7	2,9	4,1	4,6	4,8	6,6	8,7	9,6
			Penetration depth min.	0,9	1,25	1,4	1,6	2,1	2,3	2,8	3,9	4,8
			Penetration depth max.	1,2	1,55	1,8	2,1	2,6	2,8	3,3	4,4	5,3
		Type Z	Recess No.	0	1		2			3	4	
			m ref.	1,9	2,5	2,8	4	4,4	4,6	6,3	8,5	9,4
			Penetration depth min.	0,95	1,22	1,48	1,61	2,06	2,27	2,73	3,87	4,78
			Penetration depth max.	1,20	1,47	1,73	2,05	2,51	2,72	3,18	4,32	5,23

l[5]		
nom.[1]	min.	max.
3	2,8	3,2
4	3,76	4,24
5	4,76	5,24
6	5,76	6,24
8	7,71	8,29
10	9,71	10,29
12	11,65	12,35
(14)	13,65	14,35
16	15,65	16,35
20	19,58	20,42
25	24,58	25,42
30	29,58	30,42
35	34,5	35,5
40	39,5	40,5
45	44,5	45,5
50	49,5	50,5
(55)	54,05	55,95
60	59,05	60,95



1) Sizes in brackets should be avoided if possible.

2) P = pitch of the thread.

3) See ISO 7721.

4) In accordance with ISO 7721-2.

5) Screws with nominal lengths above the dashed thick line are threaded up to the head; $b = l - (k + a)$.

4 Specifications and reference International Standards

See table 2.

Table 2

Material		Steel	Stainless steel	Non-ferrous metal
Thread	Tolerance	6g		
	International Standard	ISO 261, ISO 965-2		
Mechanical properties	Property class	8.8	A2-70	CU2, CU3[1)]
	International Standard	ISO 898-1	ISO 3506	ISO 8839
Tolerances	Product grade	A		
	International Standard	ISO 4759-1		
Cross recesses		ISO 4757		
Finish		Plain Requirements for electroplating are covered in ISO 4042. If different electroplating requirements are desired or if requirements are needed for other finishes, they should be agreed between supplier and customer. Limits for surface discontinuities are covered in ISO 6157-1 and ISO 6157-3.		
Acceptability		For acceptance procedure, see ISO 3269.		

1) At the manufacturer's option.

5 Designation

Example for the designation of a cross recessed countersunk flat head screw, with thread M5, nominal length l = 20 mm, property class 8.8 and cross recess type Z, penetration depth series 1 or 2 at manufacturer's option:

Countersunk head screw ISO 7046-2-M5 × 20-8.8-Z

If, in special cases, one of the two series is wanted, the number of the series should be included in the designation, for example:

Countersunk head screw ISO 7046-2-M5 × 20-8.8-Z1

NATIONAL ANNEX A
(National Foreword)

A-1 PACKAGING

The packaging of hexagon head bolts shall be in accordance with IS 1367 (Part 18) : 1996 'Industrial fasteners — Threaded steel fasteners — Technical supply conditions: Part 18 Packaging (*third revision*)'.

A-2 BIS CERTIFICATION MARKING

Details available with the Bureau of Indian Standards.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 1986 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards: Monthly Additions'.

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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